

SEQUENCE LISTING

<110> CHISSO CORPORATION

<120> Fluorescence proteins

<130> PCT791

<150> JP 2003/207397

<151> 2003-08-12

<150> JP 2004/59611

<151> 2004-03-03

<160> 4

<170> PatentIn version 3.1

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<212> PRT

<213> Aequorea aequorea

<220>

<223> Inventor: Inouye, Satoshi

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Val Lys Leu Thr Ser Asp Phe Asp Asn Pro Arg Trp Ile Gly Arg His

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Lys His Met Phe Asn Phe Leu Asp Val Asn His Asn Gly Lys Ile Ser

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Leu Asp Glu Met Val Tyr Lys Ala Ser Asp Ile Val Ile Asn Asn Leu

35

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45

Gly Ala Thr Pro Glu Gln Ala Lys Arg His Lys Asp Ala Val Glu Ala

50

55

60

Phe Phe Gly Gly Ala Gly Met Lys Tyr Gly Val Glu Thr Asp Trp Pro

65

70

75

80

Ala Tyr Ile Glu Gly Trp Lys Lys Leu Ala Thr Asp Glu Leu Glu Lys

85

90

95

Tyr Ala Lys Asn Glu Pro Thr Leu Ile Arg Ile Trp Gly Asp Ala Leu

100

105

110

Phe Asp Ile Val Asp Lys Asp Gln Asn Gly Ala Ile Thr Leu Asp Glu

115

120

125

Trp Lys Ala Tyr Thr Lys Ala Ala Gly Ile Ile Gln Ser Ser Glu Asp

130

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Cys Glu Glu Thr Phe Arg Val Cys Asp Ile Asp Glu Ser Gly Gln Leu

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Asp Val Asp Glu Met Thr Arg Gln His Leu Gly Phe Trp Tyr Thr Met

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Asp Pro Ala Cys Glu Lys Leu Tyr Gly Gly Ala Val Pro

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Arg Trp Ile Lys Arg His Lys His Met Phe Asp Phe Leu Asp Ile Asn
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Gly Asn Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys Ala Ser Asp
35 40 45

Asp Ile Cys Ala Lys Leu Glu Ala Thr Pro Glu Gln Thr Lys Arg His
50 55 60

Gln Val Cys Val Glu Ala Phe Phe Arg Gly Cys Gly Met Glu Tyr Gly
65 70 75 80

Lys Glu Ile Ala Phe Pro Gln Phe Leu Asp Gly Trp Lys Gln Leu Ala
85 90 95

Thr Ser Glu Leu Lys Lys Trp Ala Arg Asn Glu Pro Thr Leu Ile Arg
100 105 110

Glu Trp Gly Asp Ala Val Phe Asp Ile Phe Asp Lys Asp Gly Ser Gly
115 120 125

Thr Ile Thr Leu Asp Glu Trp Lys Ala Tyr Gly Lys Ile Ser Gly Ile

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Ser Pro Ser Gln Glu Asp Cys Glu Ala Thr Phe Arg His Cys Asp Leu
145 150 155 160

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Gly Phe Trp Tyr Thr Leu Asp Pro Glu Ala Asp Gly Leu Tyr Gly Asn
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Gly Val Pro
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<400> 3

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Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu
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Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys
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Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser
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Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile

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Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His

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160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg

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Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu

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Tyr Gly Asn Phe Val Pro

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Asn Pro Lys Trp Ile Ala Arg His Lys His Met Phe Asn Phe Leu Asp
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Ile Asn Ser Asn Gly Gln Ile Asn Leu Asn Glu Met Val His Lys Ala
35 40 45

Ser Asn Ile Ile Cys Lys Lys Leu Gly Ala Thr Glu Glu Gln Thr Lys
50 55 60

Arg His Gln Lys Cys Val Glu Asp Phe Phe Gly Gly Ala Gly Leu Glu
65 70 75 80

Tyr Asp Lys Asp Thr Thr Trp Pro Glu Tyr Ile Glu Gly Trp Lys Arg
85 90 95

Leu Ala Lys Thr Glu Leu Glu Arg His Ser Lys Asn Gln Val Thr Leu
100 105 110

Ile Arg Leu Trp Gly Asp Ala Leu Phe Asp Ile Ile Asp Lys Asp Arg
115 120 125

Asn Gly Ser Val Ser Leu Asp Glu Trp Ile Gln Tyr Thr His Cys Ala

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Gly Ile Gln Gln Ser Arg Gly Gln Cys Glu Ala Thr Phe Ala His Cys

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160

Asp Leu Asp Gly Asp Gly Lys Leu Asp Val Asp Glu Met Thr Arg Gln

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170

175

His Leu Gly Phe Trp Tyr Ser Val Asp Pro Thr Cys Glu Gly Leu Tyr

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185

190

Gly Gly Ala Val Pro Tyr

195

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/011870

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C07K14/435, C07K1/02, C12N15/12, G01N27/77, G01N33/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C07K14/435, C07K1/02, C12N15/12, G01N27/77, G01N33/58

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI (DIALOG), BIOSIS (DIALOG), JSTPlus (JOIS), SwissProt/PIR/GeneSeq

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u>	SHIMOMURA, O. et al., Chemical nature of the light emitter in bioluminescence of aequorin.	<u>1-2, 6-12,</u> <u>14-17</u>
Y	Tetrahedron Letters 1973, Vol.41, No.31, pages 2963 to 2966	3-5, 13, 18-56
<u>X</u>	SHIMOMURA, O. et al., Regeneration of the photoprotein aequorin Nature 1975, Vol.256,	<u>1-2, 6-12,</u> <u>14-17</u>
Y	No.5514, pages 236 to 238	3-5, 13, 18-56
<u>X</u>	Toshi INOUE et al., "Calcium Juyo Hakko Tanpakushitsu aequorin no Koji Kozo",	<u>1-2, 6-12,</u> <u>14-17</u>
Y	Protein, Nucleic acid and Enzyme 2001, Vol.46, No.3, pages 220 to 227	3-5, 13, 18-56

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
30 November, 2004 (30.11.04)

Date of mailing of the international search report
14 December, 2004 (14.12.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/011870

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2001-270899 A (Chisso Corp.), 02 October, 2001 (02.10.01), (Family: none)	1-56
Y	JP 1-047379 A (Chisso Corp.), 21 February, 1989 (21.02.89.), (Family: none)	1-56
P,Y	JP 2004-000143 A (Chisso Corp.), 08 January, 2004 (08.01.04), (Family: none)	1-56
P,Y	JP 2004-035449 A (Chisso Corp.), 05 February, 2004 (05.02.04), (Family: none)	1-56
P,Y	JP 2004-061281 A (Chisso Corp.), 26 February, 2004 (26.02.04), (Family: none)	1-56
P,Y	JP 2004-156017 A (Chisso Corp.), 03 June, 2004 (03.06.04), (Family: none)	1-56

A. 発明の属する分野の分類 (国際特許分類 (IPC))

Int. Cl' C07K 14/435, C07K 1/02, C12N 15/12, G01N 27/77, G01N 33/58

B. 調査を行った分野

調査を行った最小限資料 (国際特許分類 (IPC))

Int. Cl' C07K 14/435, C07K 1/02, C12N 15/12, G01N 27/77, G01N 33/58

最小限資料以外の資料で調査を行った分野に含まれるもの

国際調査で使用した電子データベース (データベースの名称、調査に使用した用語)

WPI (DIALOG), BIOSIS (DIALOG), JSTPlus (JOIS), SwissProt/PIR/GeneSeq

C. 関連すると認められる文献

引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
<u>X</u> Y	SHIMOMURA, O. et al. Chemical nature of the light emitter in bioluminescence of aequorin. Tetrahedron Letters 1973, Vol. 41, No. 31, p. 2963-2966	<u>1-2, 6-12, 14-17</u> 3-5, 13, 18-56
<u>X</u> Y	SHIMOMURA, O. et al. Regeneration of the photoprotein aequorin Nature 1975, Vol. 256, No. 5514, p. 236-238	<u>1-2, 6-12, 14-17</u> 3-5, 13, 18-56
<u>X</u> Y	井上 敏 他, カルシウム受容発光蛋白質イクオリンの高次構造 蛋白質 核酸 酵素 2001, Vol. 46, No. 3, p. 220-227	<u>1-2, 6-12, 14-17</u> 3-5, 13, 18-56

☒ C欄の続きにも文献が列挙されている。☐ パテントファミリーに関する別紙を参照。

* 引用文献のカテゴリー

「A」 特に関連のある文献ではなく、一般的技術水準を示すもの
「E」 国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「L」 優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す)
「O」 口頭による開示、使用、展示等に言及する文献
「P」 国際出願日前で、かつ優先権の主張の基礎となる出願

の日の後に公表された文献
「T」 国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「X」 特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Y」 特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「&」 同一パテントファミリー文献

国際調査を完了した日

30.11.2004

国際調査報告の発送日 14.12.2004

国際調査機関の名称及びあて先

日本国特許庁 (ISA/JP)

郵便番号 100-8915

東京都千代田区霞が関三丁目4番3号

特許庁審査官 (権限のある職員)

高畑 栄二

4B

9281

電話番号 03-3581-1101 内線 3448

C (続き) 関連すると認められる文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
Y	JP 2001-270899 A (チッソ株式会社) 2001. 10. 02 (ファミリーなし)	1-56
Y	JP 1-047379 A (チッソ株式会社) 1989. 02. 21 (ファミリーなし)	1-56
P, Y	JP 2004-000143 A (チッソ株式会社) 2004. 01. 08 (ファミリーなし)	1-56
P, Y	JP 2004-035449 A (チッソ株式会社) 2004. 02. 05 (ファミリーなし)	1-56
P, Y	JP 2004-061281 A (チッソ株式会社) 2004. 02. 26 (ファミリーなし)	1-56
P, Y	JP 2004-156017 A (チッソ株式会社) 2004. 06. 03 (ファミリーなし)	1-56